

Mission Quick Facts

Launch Period: June 17–20, 2009

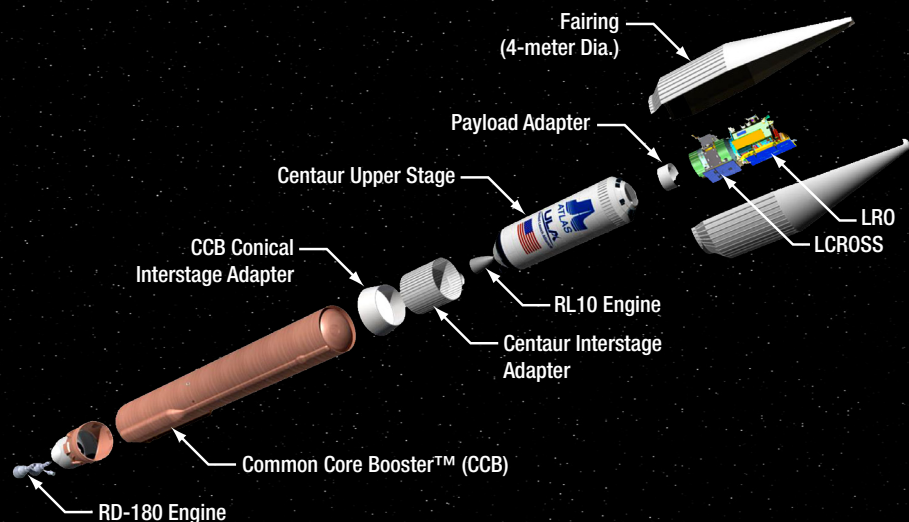
Launch Site: Cape Canaveral Air Force Station, Florida, Launch Complex 41

Launch Vehicle: United Launch Alliance Atlas V (401 configuration—4 meter fairing, 0 solid rocket boosters, 1 Centaur engine)

Fuel: The first stage is powered by kerosene (RP-1) and liquid oxygen (LOX) and the Centaur upper stage is powered by liquid hydrogen (LH2) and LOX.

Orbit: LRO has a 31 miles (50 km) altitude Circular Lunar Polar Orbit. LCROSS has a Heliocentric Lunar Gravity-Assist, Lunar Return Orbit (LGALRO) at greater than 70 degrees from the ecliptic plane

Orbital Period: LRO orbit period is 113 minutes (Lunar Polar Orbit). LCROSS—Each LGALRO is approximately 36 days. The length of the mission is dependent on the number of orbits taken to maneuver the spacecraft for impact with the preferred target crater.



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George C. Marshall Space Flight Center
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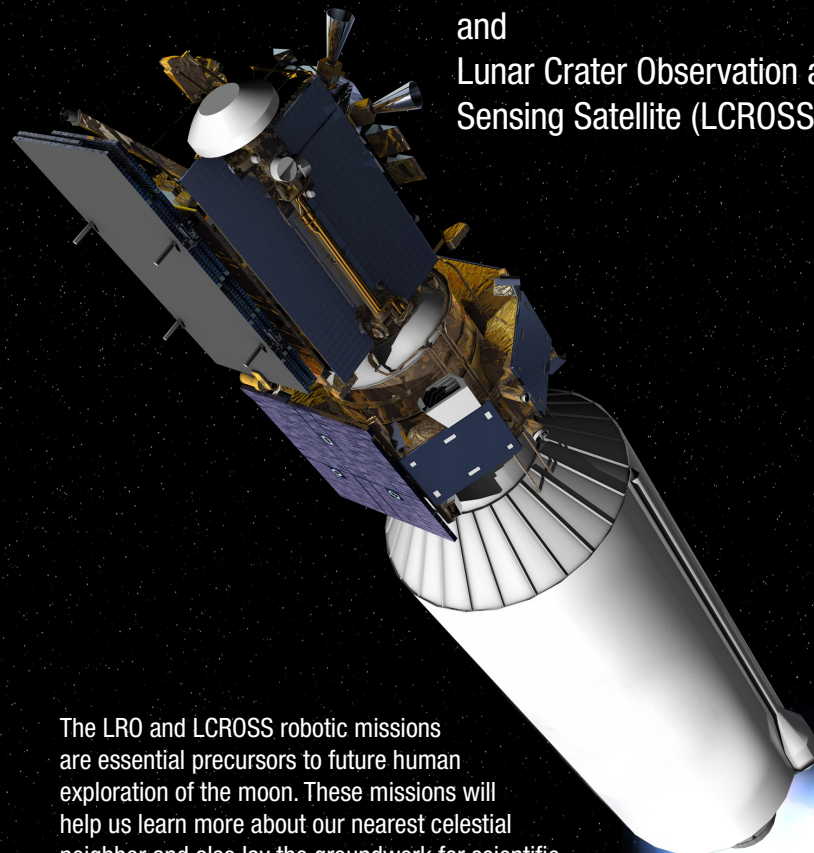
NP-2009-xx-xxx-MSFC
8-423991

National Aeronautics and
Space Administration



Leading the Way Back to the Moon

Lunar Reconnaissance Orbiter (LRO)
and
Lunar Crater Observation and
Sensing Satellite (LCROSS)



The LRO and LCROSS robotic missions are essential precursors to future human exploration of the moon. These missions will help us learn more about our nearest celestial neighbor and also lay the groundwork for scientific and exploration activities on the moon.

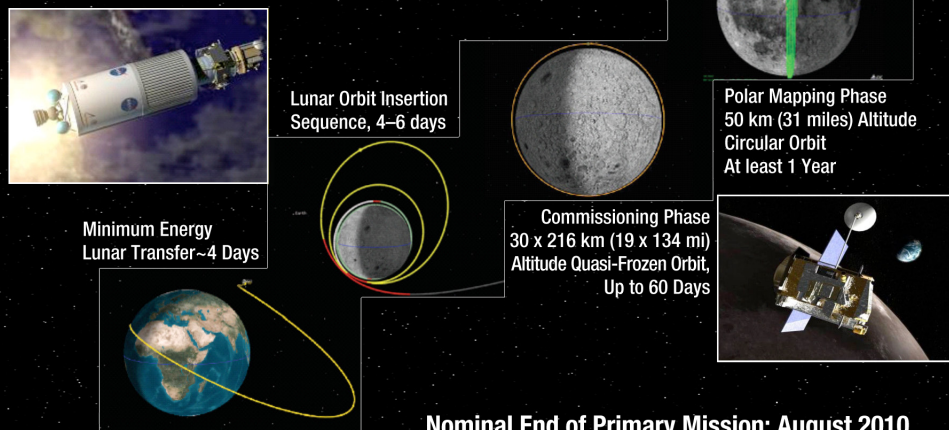
www.nasa.gov/lro
www.nasa.gov/lcross

LRO

The Lunar Reconnaissance Orbiter, or LRO, is NASA's first step in returning humans to the moon. LRO's seven instruments will help create a comprehensive atlas of the moon's features and resources. This data will help NASA identify safe landing sites and lunar resources, and it will provide information about how the lunar environment will affect humans. The LRO mission will not only enable future human exploration but also provide excellent opportunities for future science missions.

For more information on the LRO mission, please visit www.nasa.gov/lro.

Launch Window Opens: June 17, 2009



Nominal End of Primary Mission: August 2010

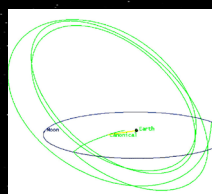
LCROSS

The Lunar Crater Observation and Sensing Satellite, or LCROSS, will search for water within a permanently shadowed crater near one of the lunar poles. The LCROSS mission will use the spent Centaur upper stage of the Atlas V rocket to impact a crater in its search for water ice. Water is a precious resource for future human exploration, and water drawn from lunar resources could have various uses including rocket fuel and breathable oxygen.

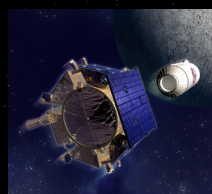
For information on viewing the LCROSS impact, currently targeted for October 2009, please visit www.nasa.gov/lcross.



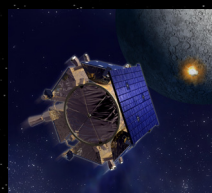
LRO and LCROSS launch together from Cape Canaveral. After sufficient distance from LRO is achieved, the shepherding spacecraft and the Centaur will perform a "blowdown" maneuver to vent any remaining fuel inside the Centaur to help prevent contamination of the impact site.



Five days after launch, the spacecraft and Centaur fly by the moon and enter into a Lunar Gravity Assist, Lunar Return Orbit (LGALRO) to position it for impact with the target lunar pole. Each LGALRO takes approximately 36 days.



On final approach to the moon, less than 10 hours before impact, the shepherding spacecraft and Centaur separate. LCROSS performs a braking maneuver to create separation and rotates 180 degrees to point its instrument payload toward the moon.



The spacecraft collects data on the Centaur impact flash and resulting debris plume and relays it back to LCROSS Mission Control. Four minutes later, the LCROSS spacecraft impacts the lunar surface creating a second debris plume.